Has Anheuser-Busch Let the Steam Out of Craft Beer? The Economics of Acquiring Craft Bewers

Kenneth G. Elzinga
Alexander J. McGlothlin

October 2020

Institute for the Study of Free Enterprise
Working Paper 32

University of Kentucky
244 Gatton College of Business and Economics
Lexington, KY 40506-0034
http://isfe.uky.edu/

Has Anheuser-Busch Let the Steam Out of Craft Beer?

The Economics of Acquiring Craft Brewers

Kenneth G. Elzinga[1]

Alexander J. McGlothlin[2,3]

Researchers' own analyses are calculated and based in part on data from The Nielsen Company (US), LLC and from data in the Nielsen Datasets at the Kilts Center for Marketing at The University of Chicago Booth School of Business. The conclusions drawn from the Nielsen data are those of the authors and do not reflect the views of Nielsen. Nielsen is not responsible for and was not involved in analyzing or preparing the results found in this paper.

[the date of receipt and acceptance should be inserted later]

Acknowledgements: The authors thank Luke W. Haynes and L. Jackson Howell Jr. for research assistance and Orley Ashenfelter, Federico Ciliberto, Charles Courtemanche, Anthony Creane, Carlos Lamarche, Alexander MacKay, Frank Scott, and attendees of the International Industrial Organization Conference in Boston and the American Association of Wine Economists Conference in Vienna for comments and helpful suggestions.

[1] Kenneth G. Elzinga
University of Virginia, Monroe Hall, Room 216, PO Box 400182, Charlottesville, VA 22904
[2] Alexander J. McGlothlin
University of Kentucky, 550 South Limestone, Lexington, KY 4050
[3] The authors are listed in random order.

Abstract: The craft beer segment in the U.S. has grown from a meager 20 brewers in the 1980s to over 7,000 today and is approaching a 15% share of all beer sales. Macrobrewers initially responded to the growth of the craft segment by internal product differentiation: offering versions of their own "craft beer." When this proved unsuccessful, the macrobrewers began acquiring craft brewers. This provoked questions about what constituted "craft beer" and concern that these acquisitions would threaten the viability of the craft beer segment and reduce consumer welfare. We examine the economic consequences of the most prominent of these acquisitions: the 2011 Anheuser-Busch InBev (ABI) purchase of Goose Island. In particular, we analyze the price and quantity effects of the acquisition in Midwest beer markets as well as the Chicago area where Goose Island was founded. We also analyze changes in the varieties of beer available to consumers in off-premise accounts to assess the effects of ABI's acquisition on independent, local breweries who jockey for shelf space with macrobrewers. We find large gains in sales for craft brewers following ABI's acquisition of Goose Island, possibly the result of marketing spillovers attracting new consumers to craft beer. We also find large negative effects on product variety, suggesting greater difficulty for craft brewers gaining shelf space in off-premise accounts. These variety effects are particularly pronounced in Goose Island's regional birthplace of Illinois. This paper offers a definition of craft beer, provides a context for craft beer acquisitions, and explains the role of beer distributors in understanding the competitive effects of craft brewer acquisitions by macrobrewers.

Key words: L11, L42, L66

1. The Issue: Independence of Craft Brewers

In a recent book about the acquisition of craft brewer Goose Island by macrobrewer Anheuser-Busch, Josh Noel claimed that "the announcement of Goose Island's $38.8 million sale to the world's largest beer company, on March 28, 2011, functionally ended an era for craft beer – an era of collaboration and cooperation, growth, and good vibes, and the shared cause of building a lifeboat in a sea of Big Beer banality" (Noel, p. xi). Noel concluded: "Goose Island was a sellout. Anheuser-Busch was out to destroy craft beer. For twenty years, craft beer and Big Beer had been mostly parallel lines. The lines had intersected" (p. 177). The sale of Goose Island was not an isolated event. In the U.S. beer industry, macrobrewers such as Anheuser-Busch InBev (ABI) and SABMiller (MillerCoors) have since acquired a number of craft brewers.

The acquisition of small, local brewers by large, national brewers has been heartening to some and disheartening to others. Being acquired at a premium valuation can be attractive to a pioneering craft brewer and can induce entry by aspiring entrepreneurs. However, consumers who value craft beer for its product variety, small business cachet, and the expressive appeal of local ownership worry that these acquisitions will taint the craft segment. Craft brewers who go it alone fear that their access to distribution channels will be foreclosed compared to the access enjoyed by craft brewers acquired by macrobrewers.

The theme of this paper is exploring whether macrobrewer-craft brewer combinations have adverse economic consequences for independent craft brewers and their customers. ABI's acquisition of Goose Island is the obvious case study for this exploration. Goose Island was the largest craft brewer in Chicago, one of the nation's largest beer markets, at the time of its acquisition, and ABI continues to be the largest macrobrewer in the nation.[4] Goose

[4] In a survey conducted by Scarborough Research from August 2013 to August 2014, 48.2 percent of Chicago residents said they drink beer. This was the nation's second highest percentage, surpassed only by Boston's 48.3 percent (Beer Marketer's Insights Annual, 2015).

Island beer is now brewed at ABI's facility in Baldwinsville, New York, which presumably offers scale economies in brewing and packaging not attainable when Goose Island's production was in Chicago.

2. Macrobrewers and Craft Beer Independence

Over 7,000 craft breweries now operate in the United States. Most are small firms whose individual market shares are *de minimus* (Elzinga et al., 2015). They fit the definition of a craft brewer put forth by the Brewers Association: a small,[5] independent,[6] brewer of beer.[7] By this taxonomy, any "small brewer of beer" that is acquired by a macrobrewer no longer is a "craft brewer" or sells "craft beer." Whether these changes are salient to consumers, however, is not clear.

Notwithstanding the thousands of craft brewers, the demand for beer in the U.S. currently is supplied largely by ABI and MillerCoors. In 2019, these two firms sold about 2/3 of the beer consumed in the U.S. (Beer Marketer's Insights Annual, 2020). For some time, these two firms could ignore the craft segment – and did.

Macrobrewers' initial response to the growth of craft beer was the production of "phantom" craft beer brands.[8] There were a few early acquisitions, as well.[9] These product extensions and acquisitions were not distinguished by their commercial success. The real movement of macrobrewers acquiring craft brewers came later when ABI embarked on a

[5] "Annual production of 6 million barrels of beer or less (approximately 3 percent of U.S. annual sales). Beer production is attributed to a brewer according to rules of alternating proprietorships" (Brewers Association, nd).
[6] "Less than 25 percent of the craft brewery is owned or controlled (or equivalent economic interest) by a beverage alcohol industry member that is not itself a craft brewer" (Brewers Association, nd).
[7] "Has a TTB Brewer's Notice and makes beer" (Brewers Association, nd).
[8] Anheuser-Busch was the first mover in this product space with Elk Mountain Ale in 1994, followed by Red Wolf Lager brand that same year. Miller followed suit by introducing its Red Dog brand through Plank Road Brewery, an in-house subsidiary of Miller that focused on craft beer products. The most successful of these phantom brands was Blue Moon, developed by Coors in 1995. MillerCoors now sells over 2 million barrels of Blue Moon per year. Blue Moon's success prompted ABI's 2006 release of its similarly marketed brand Shock Top, which reached an annual production of 900,000 barrels in 2014.
[9] For example, in 1988, Miller bought Jacob Leinenkugel Brewing Company, the first such acquisition. In 1995, Miller purchased Celis Brewery and a 50% share of Shipyard Brewing.

wave of such acquisitions, Goose Island being the first and most prominent.[10] Table 1 lists ABI's subsequent acquisitions of craft brewers following its acquisition of Goose Island. Other macrobrewers have made similar acquisitions in the craft beer segment.[11]

3. The Distribution of Beer

In most parts of the country, beer distribution is performed primarily by only two distributors, whose main source of sales is either the product line of ABI or MillerCoors (Elzinga, 2016, Maltby, 2020). Unless disallowed by state regulation, ABI and MillerCoors distributors generally operate under exclusive territory agreements (or else designated areas of primary responsibility). In addition to the brands of ABI or MillerCoors, most of these distributors also sell other beer products, including import brands, craft beer, and flavored malt beverages. However, the sales of these products by major distributors are dwarfed by their sales of either ABI or MillerCoors brands.

Beer distributors do more than simply transport products from a warehouse to retailers or on-premise accounts. Distributors also may influence placement within the beer section of a supermarket or convenience store.[12] The amount of shelf space and the location of this space are important marketing variables.

Beer distributors have pricing independence but the prices they charge often are influenced by volume rebates, advertising allowances, and other marketing incentives offered by brewers (Elzinga, 2016). Because of increasing consolidation among distributors and the prevalence of exclusive territories, questions have been raised about the lessening of

[10] Goose Island was a natural candidate for acquisition: ABI already had a minority stake in the company and it was consistently the second or third largest craft brewer in the six-state area in and around Illinois each year from 2004-2009 leading up to the acquisition.

[11] MillerCoors acquired Terrapin Beer Company in 2011, Crispin Cider in 2012, Saint Archer Brewing in 2015, and Revolver Brewing and Hop Valley in 2016. Constellation, the American distributor of prominent Mexican beers Corona and Modelo, acquired Ballast Point in 2015 and Funky Buddha in 2017. Heineken USA acquired a 50% share of Lagunitas in 2015 before purchasing the remaining share of the company in 2017.

[12] As a "category captain," a distributor may determine what brands are placed next to each other and the individual shelf level or cooler door where particular brands are displayed.

competition at the distribution level (Burgdorf, 2019, Chen and Shieh, 2016). In response to the consolidation of distributors, Bob Pease, the CEO of the Brewers Association, claimed that "a truly independent and competitive distribution tier is essential to the beer industry as a whole" (Notte, 2016).

In most parts of the country the two largest beer distributors sell over 60 percent of the beer sold to retailers and on-premise accounts (Beer Marketer's Insights Annual, 2020). This is because most parts of the country have only two primary distributors selling either the ABI or MillerCoors portfolio of brands -- along with the brands of craft brewers with whom they have distribution contracts. Most beer is not distributed by mom-and-pop operations. For example, Silver Eagle, an ABI distributor in the Houston area, has sales of nearly one billion dollars (Takahashi, 2019, Elzinga, 2016). In 2014, total sales from the top 30 distributors in the United States were $17.905 billion (Schumacher, 2014). In comparison, ABI and MillerCoors had a combined revenue of $73.240 billion in 2014 (Beer Marketer's Insights Annual, 2015).

Because of acquisitions by ABI and MillerCoors in the craft segment, existing craft brewers became concerned that the two macrobrewers would influence their distributors to foreclose or disadvantage craft brewers from on-premise and off-premise accounts. This concern provoked the National Beer Wholesalers Association (NBWA) to question the merger between ABI and SABMiller. In a letter to the Department of Justice concerning craft beer distribution, the NBWA wrote:

> Through incentive programs to promote ABI beers at the expense of rival brands, influence over distribution management, substantial control through the equity agreement and by other means to control independent distributors, the DOJ has found that ABI can inhibit craft and rival brewers' access to the market through ABI's distribution partners (National Beer Wholesalers Association, 2016).

4. AB InBev + Goose Island: The Competition Issue

Given the number of craft brewers and the relative ease of entry into the craft segment, it is plausible that craft brewer acquisitions by macrobrewers could have no price effect on craft beer. If the market for craft beer were competitive, presumably ABI would have no ability to raise the price of Goose Island and no incentive to lower its price. If this were the case, there should be no antitrust concern.

If ABI can exploit economies of scale in the production of Goose Island beer or take advantage of distribution economies in promoting this brand to retail accounts, a decrease in price and an increase in sales of Goose Island should result. If this were the case, the antitrust authorities should applaud such acquisitions.

If ABI can influence its distributors to reduce craft brewers' access to distributors, this may reduce competition in craft beer and thereby benefit macrobrewers such as ABI. The ability to influence their distributors may differ depending on the regulations that govern specific state markets for alcoholic beverages, as discussed in Burgdorf (2019). If handicapping access to distribution by craft brewers is a consequence of macrobrewer-craft brewer combinations, such acquisitions would merit antitrust attention.

Competition and sales are influenced by both supply- and demand-side decisions. Our analysis focuses predominantly on supply-side competitive forces. Frake's (2017) focus on the demand side of the ABI-Goose Island acquisition provides an alternate explanation for market forces and changing sales, specifically noting the effect of (in)authenticity and symbolic value.

5. Data

We use Nielsen scanner data from the Kilts Center for Marketing at the University of Chicago to explore whether there is evidence of foreclosure. Specifically, we utilize the Retail Scanner Dataset to observe sales of beer at the product-store-month level. In the Nielsen

dataset, sales of goods at participating retailers are recorded at the end of each week, and a volume-weighted price is reported.

We calculate both the total volume sold (in ounces) of each beer in each store in addition to the average price of each beer product sold in each store (*e.g.*, Goose Island 312). Our data include beers sold between 2010 and 2013. This affords both a pre- and post-period time frame for the acquisition, which occurred on March 28, 2011.[13] This also ensures that our time period does not overlap the subsequent acquisitions of craft brewers by ABI, which are listed in Table 1.

The dataset is limited to Illinois and the five surrounding states proximate to Goose Island's focal point of Chicago. This would be the area most likely to experience the effects, if any, of a significant expansion of Goose Island sales under the patronage of ABI. The territory examined includes Illinois, Wisconsin, Indiana, Kentucky, Missouri, and Iowa.

Due to marketing promotions, stockpiling, and uneven consumption around occasions such as the Super Bowl or the Fourth of July, sales may be choppy at the week level. We aggregate weekly sales to the month in which they were reported to avoid the influence of outliers due to holidays or sporting events. This reduces the number of data points, which allows expanding the geographical scope of the sample and renders the computational burden of the dataset manageable.[14] As a robustness check, we also run regressions of our primary specification on weekly data and find qualitatively similar results.

Product characteristics such as product name, product company, package type, average weekly price, and volume sold also are included. The sample we use to analyze price and quantity effects is restricted to beer sold in six packs of 12-ounce containers. To include

[13] The acquisition was not pre-announced. Additionally, it was immediately implemented. Although there may be some lagged effects post-acquisition, for our analysis these effects are insignificant due to the acquisition's rapid ratification and enactment.

[14] Beer sales are not evenly spaced across the week. Because of this, as well as for simplicity during data aggregation, we count the whole week's worth of sales in the month that sales are reported. For instance, if sales are reported on the third of the month, the entire week of sales are recorded as having occurred in that month.

different pack sizes would require controlling for any price differences due to quantity discounts.[15] Additionally, packs including more than six bottles of beer generally are sold only by macrobrewers and large craft brewers who produce these pack sizes, creating a possible selection issue. Furthermore, consumers are less likely to substitute from six packs to other multi-packs as readily as they do between six packs. Limiting the analysis to six packs moves the analysis closer to an apples-to-apples comparison. In the Nielsen dataset for the states in our sample, six pack packages of 12-ounce containers comprise more than two-thirds of the data points on craft beer and almost one-quarter of the data points on macro beer.

Store characteristics also are included in this dataset; specifically channel type, state, three-digit zip code, FIPS county code, and FIPS state code.[16] We use the FIPS county code in which the store is located to identify the MSA where the store is located to control for MSA level demand. Our data include all stores located in MSAs in the six states mentioned above. We also are able observe individual stores and parent companies for different retailers, though the dataset shields the true identity of each particular retailer. All observations in the Nielsen dataset for which these pieces of information are available are included in our sample.

Finally, we identify which products in the dataset are produced by craft brewers and which are produced by macrobrewers. We do this by manually categorizing each beer company in the dataset as either a craft brewer or one of the top five macrobrewers (ABI, Constellation, MillerCoors, Heineken, and Pabst). All other beer produced by brewers outside these two categories is dropped from the dataset. We include Goose Island beers in our taxonomy of craft brewers for our analysis.

[15] It is known that the major brewers engage in price discrimination as part of their competitive strategy but we can find no precedent in the literature studying this to follow and leave analysis of price discrimination in the beer industry to future research (Elzinga, 2016).

[16] FIPS codes, or Federal Information Processing Standards, are five-digit codes that uniquely identify counties or county-equivalent jurisdictions in the United States.

We develop two samples based on products information. The first contains all products of craft beer sold that are represented in the Nielsen dataset. Many craft brewers produce small batches of output for sale through a taproom or brewpub. These sales are not picked up. Our analysis of the effect of the ABI-Goose Island acquisition centers on the larger craft brewers who distribute through channels tallied in the Nielsen dataset. We also exclude any craft brewers that sold beer in less than 480 store-weeks in our dataset (the equivalent of selling beer in ten stores for the duration of our panel).[17] This sample was chosen to ascertain if the merger had an effect on the pricing, sales, as well as the variety of craft products in general – a concern of craft beer enthusiasts.

The second sample contains data on beer produced by macrobrewers.[18] This sample was chosen to ascertain whether the ABI-Goose Island acquisition allowed macrobrewers to raise prices on their products by alleviating competitive pressure from the craft beer segment.

6. Summary Statistics

Descriptive statistics are found in Tables 2-6. Table 2 describes key variables for our craft beer sample in the pre- and post-acquisition periods and Table 3 describes temporal and geographic characteristics of the craft beer sample. Table 4 describes key variables for our macro beer sample in the pre- and post-acquisition periods and Table 5 describes temporal and geographic characteristics of the macro beer sample. Table 6 shows the distribution of our data across different MSAs.

Several pieces of information are noteworthy. First is the relatively high average price of high end craft beer and specialty macro beers, which now rival the price of midrange wines and spirits. Goose Island positions itself on this end of the beer spectrum via its high end line of beers that are part of its Bourbon County brand. Second, macrobrewers produce the vast

[17] Out of almost 3.8 million observations, we drop less than 14,000 due to this restriction. It should be noted that no macrobrewers were excluded due to this restriction.
[18] We include all beers sold by ABI, Constellation, MillerCoors, Heineken, and Pabst.

majority of products sold in off-premise accounts. The variable, number of competing craft/macro/Goose Island products, includes both six pack and non-six pack containers, so while we analyze the price and volume effects in terms of only six pack containers, we analyze the total level of product variety in a store and find that consumers have many more beer options from macrobrewers compared to craft products, despite the growth of craft options and slight decline of macro options between the pre- and post-periods. Third, during a given month there is a wide range in terms of sales volume across different products. Finally, there was an explosive growth in the craft segment in terms of observations in our data compared to the slower growth in macro beer brands (Tables 3 and 5).

7. Model

The primary concern of independent craft brewers is that ABI will exploit distributor relationships to induce substitution towards Goose Island and away from "true" craft beers. If this is the case, the effect of the acquisition should be stronger in stores and markets where ABI has a greater share of market and thus its distributors have more influence. Recall also the description earlier of how a macrobrewer can influence its downstream distributor.[19]

To address this, one would like to know the actual share of revenue or profits generated by ABI for each of its distributors in each of its retail stores. That information is not publicly available. However, Nielsen data allow us to calculate the market shares at the store-month level captured by ABI products.

The variable ABI Market Share is defined as the pre-merger market share (determined by revenue) of ABI branded products for a particular store. Before we restrict our sample by package size or brand type we calculate the total volume of beer sold in each store in the pre-

[19] The NBWA claims ABI "encourages distributors to drop rival beers and replace it [sic] with an ABI owned 'craft' to replace any lost sales. . . .The pressure to drop rival beers does not end there. ABI executives have frequently visited distributors that choose to sell non-ABI products to encourage them otherwise, and publicly criticize distributors that carry non-ABI brands at trade meetings." (National Beer Wholesalers Association, 2016)

acquisition time period as well as the total volume of beer sold by ABI in the pre-acquisition time period in order to estimate ABI's pre-merger market share in each store. We implement our difference-in-differences model with this as our "treatment" or comparison variable, making this akin to an intent to treat specification.

We exploit this as our identifying variation because of the concern that ABI will foreclose other craft brewers, or use its brand portfolio, now including Goose Island, to move pricing to alleviate pressure on ABI's primary brands. We expect that stores having greater sales of ABI brands in the pre-merger period should be more affected than stores whose revenue is largely sourced from other brewers due to the influence of the distribution tier on off-premise sales. This specification also allows us to drill into the effects of the merger at the store level.

The Goose Island acquisition was announced on March 28, 2011. We use this date to demarcate the pre-merger and post-merger time periods.[20] Our standard errors are heteroscedasticity robust and clustered at the store level in all models.[21] A fixed-effects model at the product-store level controls for time-invariant differences in individual stores' pricing strategies of individual products.

We model our difference-in-differences framework with four separate specifications and three outcome variables of interest: average price, volume sold, and number of competing beer products, all observed at the product-store-month level. Our first specification controls for all product-store fixed effects and interactions, as well as monthly time fixed effects (48 in total) in addition to the difference-in-differences variables: a dummy variable that is equal to 1 for the post-acquisition time period (*Post*), the *ABI Market Share* variable, and an interaction term of these two variables (*Post x ABI Market Share*). Commensurate with the typical difference-in-differences approach, this interaction term is the variable of interest. If

[20] The post-merger time period begins in April of 2011 and the pre-merger time period ends in March of 2011.
[21] Note this is individual store level, not retailer chain level.

our estimates are causal, the coefficient on this term will reveal the positive or negative impact of the acquisition on each of the dependent variables of interest. Because we control for time fixed effects, the variable *Post* will not be identified.

The second specification adds year and MSA level interaction terms. Craft beer demand and growth has a distinct geographical profile and has been observed to be heterogeneous across areas and time. This specification should control for differences in the growth of the craft beer segment across different MSAs and time.

The third specification adds year and retailer interactions. Retailers such as Walmart have a different product portfolio than Target, just as Whole Foods will offer different products and package sizes than Kroger.[22] However, due to the three-tier system, retailers may interact with distributors at a higher level than the individual store. This approach captures more heterogeneity than the typical channel-level analysis but also considers the idiosyncrasies of the three-tier system. Moreover, by including the time interaction, these effects are allowed to fluctuate as the landscape for craft beer evolves and as retailers respond.

Our final specification adds year and beer company interactions. This specification aims to control for the changes on the supply side of the beer market. These interactions control for costs that different companies may face over time, whether due to inputs in production, marketing, labor, legal and administrative, or other company-specific costs. We report and discuss each of these in our main results because a natural concern is that this specification may over-control for the strategic effects we seek to uncover.

Our model has the following form:

$$\ln(y\_hijkmt) = \beta_0 + \beta_1 Post_t + \beta_2 ABI\ Market\ Share_m + \beta_3 Post * ABI\ Market\ Share_{mt} + \tau_t + \gamma_{jt} + \alpha_{kt} + \delta_{it} + \mu_{hijkm} + \epsilon_{hijkmt} \quad (1)$$

[22] In the Nielsen dataset, because retailers' names are masked, our results do not imply anything concerning these specific stores.

That is, we regress an outcome variable y_{hijkmt} related to a particular products of beer h sold by company i, in MSA j, by retailer k, at store m, in month t, against the $Post_t$ dummy variable, the pre-acquisition $ABI\ Market\ Share_m$ by volume at store m, their interaction term $Post * ABI\ Market\ Share_{mt}$, monthly time fixed effects τ_t, MSA and time interactions γ_{jt}, retailer and time interactions α_{kt}, company and time interactions δ_{it}, product, company, MSA, retailer, and store fixed effects as well as all cross interactions, and a stochastic error term.

As mentioned, we study three outcome variables of interest: (1) the log of price per ounce; (2) log of total sales by volume; and (3) the number of competing products sold in the store. The first two outcome variables are conventional variables in merger retrospectives. We wish to know if price has decreased, commensurate with the acquisition generating cost efficiencies; or if price has increased, commensurate with coordination-dominating merger related effects. Similarly, increasing total sales at the products-store-month level may indicate the acquisition is procompetitive and decreasing total sales may indicate the opposite, such as would occur if ABI foreclosed other craft brewers from the market.

Consumer welfare is a function not only of price but also quality. Craft brewers claim they compete for consumer patronage through quality rather than price. For this reason, we include a measure of the number of products that compete within a store, to attempt to identify the effect of the acquisition on the metric of product variety. For each craft beer product, we calculate the number of unique craft beer products (at the company level, *e.g.* Goose Island 312) that are sold in the relevant store-month in the sample of craft beer.

We also calculate the number of unique macro beer products that are sold in the relevant store-month by these firms. We diverge from our price and quantity analysis by including all package sizes in terms of container size and number of containers in this analysis to calculate

these outcome variables. The observations included in our regressions are still limited to six packs of 12-ounce containers.

We limit our analysis to reduced form regressions and do not apply structural modeling techniques, which is a limitation of our analysis. For that reason we are unable to estimate unobserved parameters that may be of antitrust interest, such as the change in marginal cost of Goose Island products, or the effect of key variables on quantity demanded or supplied post-acquisition. We are also unable to run counterfactuals to estimate the price and quantity effects of an alternative acquisition, or the impact Goose Island may have had were it to have remained independent. Another natural question in the beer industry that structural models may be able to answer is if there would have been a different impact had MillerCoors been the acquirer instead of ABI. These are all important questions and we leave them for future research.

8. Main Results

8.1. Price Effects

We find statistically significant and positive price effects (Table 7) on both craft and macro products (less than one percent for products in stores with the average ABI pre-merger market share). However, given that the average price of a six pack in our sample is between six and nine dollars, we do not interpret these results as being economically significant. While the acquisition may not have led to sizable increases in the price of craft beer, there is no evidence that any efficiency gains from ABI's brewing and packaging capability were passed on to consumers of craft beer in the form of lower prices.

These effects can be contrasted with the findings of Miller and Weinberg (2017) in their examination of the MillerCoors joint venture. They found this amalgamation, combining the second and third largest macrobrewers into the second largest macrobrewer, to have resulted

in large post-merger price increases for macro beer. A key takeaway of their results was the possibility of post-merger price coordination among macrobrewers.

The ABI-Goose Island combination differs from MillerCoors in almost every way. It is unlikely that ABI would be able to collude with the hundreds of craft brewers with which it competes in this six state area (a list of craft brewers in our sample is located in the Appendix) or that these modest price increases are due to tacit or overt collusion.

8.2. Quantity Effects

In contrast to our results on price effects, there are important consequences of the ABI-Goose Island combination with regard to quantity, which are reported in Table 8. We find large, positive, and statistically significant increases in sales volume of craft beer in those stores with larger pre-merger ABI market share. This suggests that the amount of craft beer sold per week increased in the very stores that presumably would have been most affected by the acquisition and any anticompetitive strategy on the part of ABI or its distributors.

It is plausible that the increase of craft beer sales overall may be the result of aggressive marketing of Goose Island by ABI that spilled over to other brands, or a response against ABI and its acquisition of Goose Island. Either way this finding is noteworthy, given the initial fears of the craft brewing community regarding the post-merger craft beer landscape.

This result contrasts with our large, negative, and statistically significant results when examining quantity effects on macro beers. The fear within the craft beer community that ABI would acquire craft brewers in order to drive consumers to their existing brands is unfounded.

8.3. Effect on Extent of Competition

In addition to the typical antitrust metrics of price and quantity, our investigation highlights the importance of analyzing other quality related metrics. For each of our six pack products, we count how many other total beer products of any size, quantity, and brand that a product competes with in a store each month. We use this number as the outcome variable for our

difference-in-differences model. We find that for macro beers there is a statistically significant decrease in competition of a little over two beer products sold by other macrobrewers in a store with the average pre-merger ABI market share. We report these results in Table 9.

Given that the average six pack sold by a macro brewer faced competition from just over 150 other macro beer products in a month per store in our dataset, we are not sure there is a meaningful, economically significant effect. However, given that craft beer competed with roughly 45 other craft beer products during an average store-month pre-merger and 60 other craft beer products during an average store-month post-merger, estimates of our interaction indicate a store with the average pre-merger ABI market share would experience a decrease in variety of more than four craft peer products, indicating a decrease in variety of roughly six to ten percent. This provides some ammunition to those fearing that craft brewers might be foreclosed in those stores where ABI has a larger share of beer sales.

8.4. Effect on Goose Island Products

What was the effect of the acquisition on Goose Island sales? To answer this question, we examine a subsample of the Nielsen data consisting only of Goose Island products to learn if the acquisition resulted in increased sales or whether there were price decreases passed on to consumers as a result of any efficiency gains made possible by the acquisition. Results are reported in Table 10.[23] The most interesting takeaway is the estimates of sizable decreases in price and increases in volume when time fixed effects and time and MSA interactions are included. These disappear when time and retailer interactions are included. Because the true identity of retailers is hidden in the Nielsen data set we do not try to identify which retailers may be driving decreases in price and increases in volume. However, it does appear that the fate of Goose Island may be dependent on where its product is sold.

9. Robustness Checks

[23] Because this is the same company we are unable to add Year x Company interactions to this analysis.

9.1. Regional Analysis: Illinois

Each of ABI's ten acquisitions of a craft brewer has been in a state or metro area that has experienced significant growth in the craft segment. A natural question to ask is whether there are different effects in the regions in which these craft brewers are located compared to broader geographic areas. We attempt to answer this by analyzing the effect on craft beer sold in Illinois and report these results in Table 11. We find much larger increases in price than our more general analysis and large, though statistically insignificant declines in sales volume of Goose Island.

These findings are commensurate with a rejection of the brand by former consumers of Goose Island in its birthplace, lending credence to previous findings about consumer loyalty to local craft beer brands. Additionally, we find a negative effect on the number of products of craft beer sold in individual stores more than twice that of our more general sample. These results, when taken together, support concerns raised by the NBWA and craft brewers regarding anticompetitive conduct on the part of ABI in Illinois and the Chicago beer market.

9.2. Channel Level Analysis

We also analyze whether the ABI-Goose Island acquisition had heterogeneous effects across different retail outlets. While the exact identity of each retailer is hidden, the Nielsen database allows us to observe whether each product was sold in a convenience store, drug store, food (grocery) store, or mass merchandiser. We re-analyze the price and sales effects in our macro and craft samples by dividing the data into sub-samples for each of these four types of stores and report these findings in Tables 12 and 13.

9.3. Using Weekly Data

One concern is that our aggregation of data to the monthly level will result in loss of information compared to conducting our analysis at the weekly level by which Nielsen reports

its data. We re-analyze the price and sales effects in our macro and craft samples and find qualitatively similar results that we report in Table 14.

9.4. Dropping Data Surrounding the Acquisition

Finally, although there was no pre-announcement of the acquisition and ABI is documented as having immediately integrated Goose Island into its operations, we do drop data from the month before and month after the announcement and re-analyze the price and sales effects in our macro and craft samples. Results are generally the same except for our estimate on the effect on craft beer volume, which is more than twice our primary estimate. There may be several reasons for this: ABI may have influenced distributors without explaining their reason in the lead-up to the acquisition, or ABI may have held off marketing its new products immediately after purchase. This only bolsters our findings that, in terms of volume of craft beer that found its way out of breweries, onto shelves, and into homes, the benefits of the ABI-Goose Island acquisition were positive.

10. Conclusion

One swallow does not make a spring and one case study of an acquisition does not prove a proposition. Nonetheless, in watching for spring we do look for swallows. For that reason, the ABI-Goose Island acquisition is a fitting case study of the economic consequences of combining a macrobrewer with a prominent craft brewer. Applying the standard price-quantity consequences used in merger retrospectives, the ABI-Goose Island combination fails to confirm fears that the acquisition of Goose Island by ABI would hamper other craft brewers and consumers.

If the ABI-Goose Island amalgamation reflects other such combinations, present and future, our study suggests that beer drinkers are not worse off in terms of the usual consumer welfare metrics of price and output. To the extent beer drinkers value the Brandeisian merits of small business and derive utility from purchasing the product of locally owned firms, the

acquisition of craft brewers by macrobrewers reduces the choice set of “true” craft beers. Fortunately, the increasing supply of new entrants in the craft segment comes at a more rapid rate than the current propensity of macrobrewers to acquire them or foreclose them from shelf space in off-premise accounts.

References

Acitelli, T. (2013). *The Audacity of Hops: The History of Americas Craft Beer Revolution*. Chicago: Chicago Review Press.

Beer Marketer's Insights (2015, 2016, 2020). *Beer Industry Update*. New York.

Bostwick, W. (2018). Be a craft-beer connoisseur: How to find the brews for you. *Wall Street Journal*.

Brewer's Association (n.d.). National beer sales & production data.

Burgdorf, J. (2019). Impact of mandated exclusive territories in the US brewing industry: Evidence from scanner level data. *International Journal of Industrial Organization*, 63, 376–416.

Chen, C., Shieh, S. (2016). Does exclusive dealing matter? Evidence from distribution contract changes in the U.S. beer industry. *The Journal of Industrial Economics*, 64, 411-435.

Elzinga, K. (2016). The beer industry. In Brock, J., (ed.), *The Structure of American Industry* 13th edition, 119-140. Illinois: Waveland Press.

Elzinga, K., Tremblay, C., and Tremblay, V. (2015). Craft beer in the United States: History, numbers, and geography. *Journal of Wine Economics*, 10, 242–274.

Frake, J. (2017). Selling Out: The Inauthenticy Discount in the Craft Beer Industry. *Management Science*, 63(11), 3930-3943.

Grossman, K. (2013). *Beyond the Pale: The Story of Sierra Nevada Brewing Co*. New Jersey: John Wiley & Sons.

Hindy, S. (2014). *The Craft Beer Revolution: How a Band of Microbreweries is Transforming the World's Favorite Drink*. New York: St. Martin's Press.

Kostov, N. (2018). Bud Light bets on 'Dilly' to stem sliding sales. *Wall Street Journal*.

Lewis, S. (2014). *We Make Beer: Inside the Spirit and Artistry of America's Craft Brewers*. New York: St. Martin's Press.

Macintosh, J. (2011). *Dethroning the King: The Hostile Takeover of Anheuser-Busch, an American Icon*. New Jersey: John Wiley & Sons.

Maltby, N (2020). Corporate Governance, the Craft Brew Alliance, and A-B. In Madsen, E. S., Gammelgaard, J., and Hobdari, B. (eds.), *New Developments in the Brewing Industry: The Role of Institutions and Ownership*. Oxford: Oxford University Press.

Miller, N., and Weinberg, M. (2017) Understanding the Price Effects of the MillerCoors Joint Venture. *Econometrica,* 85(6), 1763-1791.

National Beer Wholesalers Association (2016). *Re: Comments from the National Beer Wholesalers Association Concerning the Proposed Final Judgment in United States v. Anheuser-Busch InBev SA/NV and SABMiller plc*.

Noel, J. (2018). *Barrel-Aged Stout and Selling Out: Goose Island, Anheuser-Busch, and How Craft Beer Became Big Business*. Chicago: Chicago Review Press.

Notte, J. (2016). Opinion: Brewers Association CEO prepares craft beer for battle. https://www.marketwatch.com/story/brewers-association-ceo-prepares-craft-beer-for-battle-2016-04-08. (Last accessed 10/19/2020).

Schumacher, H. (2014). List: Top 30 US beer distributors. https://www.katzamericas.com/blog/beer/list-top-30-us-beer-distributors/. (Last accessed 10/20/2020).

Silberberg, E. (1985). Nutrition and the demand for taste. *Journal of Political Economy*, 93, 881–900.

Slosberg, P. (1998). *Beer for Pete's Sake: The Wicked Adventures of a Brewing Maverick*. Colorado: Brewers Publications.

Steinman, B. (2019a). Beer Marketer's Insights, February 25, 2019. Unpublished paper.
Steinman, B. (2019b). Beer Marketer's Insights, March 11, 2019. Unpublished paper.
Takashi, P. (March 22, 2019). Silver Eagle's Houston beer business to be acquired in $1B deal. *The Houston Chronicle*. https://www.houstonchronicle.com/business/article/Silver-Eagle-s-Houston-beer-business-to-be-13710358.php. (Last accessed 10/12/2020).
Tremblay, C. and Tremblay, V. (2011). Recent economic developments in the import and craft segments of the U.S. brewing industry. In Swinnen, J., (ed.), *The Economics of Beer*, 141–160. Oxford: Oxford University Press.
Wollmann, T. (2019). Stealth consolidation: Evidence from an amendment to the Hart-Scott-Rodino Act. *American Economic Review: Insights*, 1, 77–94.

Tables

Table 1: ABI Acquisitions

Craft Brewer	Location	Production capacity at time of purchase (barrels/year)	Date acquisition announced
Blue Point Brewing Co.	Patachogue, NY	60,000	February, 2014
10 Barrel Brewing Co.	Bend, OR	40,000	November, 2014
Elysian Brewing Co.	Seattle, Washington	54,000	January, 2015
Golden Road Brewing Co.	Los Angeles, CA	45,000	September, 2015
Four Peaks Brewing Co.	Tempe, AZ	70,000	December, 2015
Breckenridge Brewery Co.	Breckenridge, CO	70,000	December, 2015
Devils Backbone Brewing Co.	Roseland, VA	60,000	April, 2016
Karbach Brewing Co.	Houston, TX	40,000	November, 2016
Wicked Weed Brewing Co.	Asheville, NC	40,000	May, 2017

Table 2: Selected Summary Statistics, Craft Beer Sample

	Variable	Mean	SD	Min	Max
Pre-Acquisition	Average Monthly Price	8.065	1.316	0.01	24
	Average Monthly Sales (six-packs)	9.526	18.978	1	884
	Competing Craft Beer Products	66.264	47.480	1	306
	Competing Macro Beer Products	184.557	56.975	0	318
	Competing Goose Island Products	4.487	3.085	0	12
	ABI Market Share	0.379	0.175	0	0.89
Post-Acquisition	Average Monthly Price	8.509	1.367	0.01	30
	Average Monthly Sales (six-packs)	8.671	18.938	1	1095
	Competing Craft Beer Products	95.711	69.041	1	409
	Competing Macro Beer Products	185.956	61.417	0	329
	Competing Goose Island Products	5.772	3.926	0	1
	ABI Market Share	0.354	0.188	0	1

Table 3: Frequency of Data by State and Year, Craft Beer Sample

State	2010	2011	2012	2013	Total
Iowa	48,719	55,380	79,755	87,834	271,688
Illinois	84,823	104,929	155,662	220,590	566,004
Indiana	22,489	27,148	32,558	46,558	128,753
Kentucky	20,822	25,347	28,966	34,039	109,174
Missouri	35,223	45,768	66,990	75,976	223,957
Wisconsin	65,410	84,352	94,835	99,179	343,776
Total	277,486	342,924	458,766	564,176	1,643,352

Table 4: Selected Summary Statistics, Macro Beer Sample

	Variable	Mean	SD	Min	Max
Pre-Acquisition	Average Monthly Price	6.490	1.290	0.010	20.000
	Average Monthly Sales (six-packs)	12.614	16.227	1.000	1091.000
	Competing Craft Beer Products	44.612	37.811	0.000	306.000
	Competing Macro Beer Products	161.341	59.688	1.000	318.000
	Competing Goose Island Products	3.630	3.081	0.000	12.000
	ABI Market Share	0.377	0.175	0.000	1.000
Post-Acquisition	Average Monthly Price	6.847	1.299	0.010	119.740
	Average Monthly Sales (six-packs)	12.181	15.598	1.000	946.000
	Competing Craft Beer Products	60.063	56.714	0.000	409.000
	Competing Macro Beer Products	156.275	66.537	1.000	329.000
	Competing Goose Island Products	4.163	3.753	0.000	17.000
	ABI Market Share	0.371	0.197	0.000	1.000

Table 5: Frequency of Data by State and Year, Macro Beer Sample

State	2010	2011	2012	2013	Total
Iowa	43,973	45,855	75,898	80,103	245,829
Illinois	149,723	166,655	170,420	181,195	667,993
Indiana	59,426	55,896	56,839	65,557	237,718
Kentucky	47,195	49,583	51,035	54,202	202,015
Missouri	43,127	45,823	67,525	72,081	228,556
Wisconsin	84,339	90,716	96,266	103,997	375,318
Total	427,783	454,528	517,983	557,135	1,957,429

Table 6: MSA Frequencies

MSA	Frequency	Percent	MSA	Frequency	Percent
APPLETON-OSHKOSH-NEENAH, WI	68,197	1.89	KANSAS CITY, MO-KS	115,006	3.19
BLOOMINGTON, IN	17,845	0.5	KENOSHA, WI	29,977	0.83
BLOOMINGTON-NORMAL, IL	9,737	0.27	KOKOMO, IN	2,897	0.08
CEDAR RAPIDS, IA	99,974	2.78	LA CROSSE, WI-MN	2,702	0.08
CHAMPAIGN-URBANA, IL	2,158	0.06	LAFAYETTE, IN	18,305	0.51
CHICAGO, IL	1,065,000	29.58	LEXINGTON, KY	89,123	2.48
CINCINNATI, OH-KY-IN	69,497	1.93	LOUISVILLE, KY-IN	156,152	4.34
CLARKSVILLE-HOPKINSVILLE, TN-KY	7,261	0.2	MADISON, WI	100,748	2.8
COLUMBIA, MO	44,377	1.23	MILWAUKEE-WAUKESHA, WI	363,778	10.1
DAVENPORT-ROCK ISLAND-MOLINE, IA-IL	104,787	2.91	MINNEAPOLIS-ST. PAUL, MN-WI	8,940	0.25
DECATUR, IL	11,331	0.31	MUNCIE, IN	1,753	0.05
DES MOINES, IA	199,202	5.53	OMAHA, NE-IA	26,121	0.73
DUBUQUE, IA	24,498	0.68	OWENSBORO, KY	10,843	0.3
DULUTH-SUPERIOR, MN-WI	288	0.01	PEORIA-PEKIN, IL	39,792	1.11
EAU CLAIRE, WI	3,856	0.11	RACINE, WI	45,366	1.26
ELKHART-GOSHEN, IN	6,265	0.17	ROCKFORD, IL	12,408	0.34
EVANSVILLE-HENDERSON, IN-KY	4,961	0.14	SHEBOYGAN, WI	31,253	0.87
FORT WAYNE, IN	49,284	1.37	SIOUX CITY, IA-NE	28,236	0.78
GARY, IN	60,496	1.68	SOUTH BEND, IN	10,723	0.3
GREEN BAY, WI	24,247	0.67	SPRINGFIELD, IL	3,325	0.09
HUNTINGTON-ASHLAND, WV-KY-OH	2,793	0.08	SPRINGFIELD, MO	55,890	1.55
INDIANAPOLIS, IN	158,147	4.39	ST. JOSEPH, MO	7,880	0.22
IOWA CITY, IA	54,270	1.51	ST. LOUIS, MO-IL	241,151	6.7
JANESVILLE-BELOIT, WI	19,710	0.55	TERRE HAUTE, IN	11,315	0.31
JOPLIN, MO	16,841	0.47	WATERLOO-CEDAR FALLS, IA	31,459	0.87
KANKAKEE, IL	10,584	0.29	WAUSAU, WI	20,032	0.56
			Total	3,600,781	100

Table 7: Fixed Effects Model (D-i-D), dep. var. = ln(avg. price)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post x ABI Market Share	.0246***	.0091**	.0152***	.0150***	.0543***	.0188***	.01778***	.0170***
	(.0033)	(.0031)	(.0030)	(.0029)	(.0027)	(.0030)	(.0023)	(.0023)
Observations	1643352	1643352	1643352	1643352	1957429	1957429	1957429	1957429
Sample	Craft	Craft	Craft	Craft	Macro	Macro	Macro	Macro
Time Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year x MSA Interactions		Y	Y	Y		Y	Y	Y
Year x Retailer Interactions			Y	Y			Y	Y
Year x Producer Interactions				Y				Y

Cluster-robust standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Dependent variable is the log of the average price of a particular beer in a particular store in a particular month. Sample includes all craft beer sold by brewers meeting the Brewers Association definition of a craft brewer or includes all macro beer sold by ABI, Constellation, MillerCoors, Heineken, and Pabst, as specified, in Metropolitan Statistical Areas of Iowa, Illinois, Indiana, Kentucky, Missouri, or Wisconsin between 2010 and 2013. Only 12 oz containers sold in packs of six are included in the sample sold by companies that sold products in at least 480 store weeks are included in the sample.

Table 8: Fixed Effects Model (D-i-D), dep. var. = ln(sales volume)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post x ABI Market Share	.1521***	.1219***	.0738**	.0858***	.1155***	-.0204	-.0499*	-.0441*
	(.0241)	(.0235)	(.0234)	(.0233)	(.0209)	(.0220)	(.0204)	(.0204)
Observations	1643352	1643352	1643352	1643352	1957429	1957429	1957429	1957429
Sample	Craft	Craft	Craft	Craft	Macro	Macro	Macro	Macro
Time Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year x MSA Interactions		Y	Y	Y		Y	Y	Y
Year x Retailer Interactions			Y	Y			Y	Y
Year x Producer Interactions				Y				Y

Cluster-robust standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Dependent variable is the log of the total volume in ounces of a particular beer in a particular store in a particular month. Sample includes all craft beer sold by brewers meeting the Brewers Association definition of a craft brewer or includes all macro beer sold by ABI, Constellation, MillerCoors, Heineken, and Pabst, as specified, in Metropolitan Statistical Areas of Iowa, Illinois, Indiana, Kentucky, Missouri, or Wisconsin between 2010 and 2013. Only 12 oz containers sold in packs of six are included in the sample sold by companies that sold products in at least 480 store weeks are included in the sample.

Table 9: Fixed Effects Model (D-i-D), dep. var. = number of competing craft/macro beers sold in store

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post x ABI Market Share	3.0880	-11.7771**	-11.7937**	-11.5907**	-4.2547*	-4.2516**	-6.1047***	-6.1050***
	(5.2660)	(3.6199)	(3.6862)	3.6632	(1.9789)	(1.512)	(1.3956)	(1.3951)
Observations	1643352	1643352	1643352	1643352	1957429	1957429	1957429	1957429
Sample	Craft	Craft	Craft	Craft	Macro	Macro	Macro	Macro
Time Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year x MSA Interactions		Y	Y	Y		Y	Y	Y
Year x Retailer Interactions			Y	Y			Y	Y
Year x Producer Interactions				Y				Y

Cluster-robust standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Dependent variable is the number of craft beer products competing with a particular beer in a particular store in a particular month or is the number of macro beer products competing with a particular beer in a particular store in a particular month, as specified. Sample includes all craft beer sold by brewers meeting the Brewers Association definition of a craft brewer or all macro beer sold by ABI, Constellation, MillerCoors, Heineken, and Pabst, as specified, in Metropolitan Statistical Areas of Iowa, Illinois, Indiana, Kentucky, Missouri, or Wisconsin between 2010 and 2013. Only 12 oz containers sold in packs of six are included in the sample sold by companies that sold products in at least 480 store weeks are included in the sample.

Table 10: Fixed Effects Model (D-i-D), Goose Island Beer Sample, dep. var. = ln(avg. price)

	(1)	(2)	(3)	(4)	(5)	(6)
Post x ABI Market Share	-.0917***	-.0573***	-.0085	.5160***	.2859**	-.0187
	(.0090)	(.0101)	(.0079)	(.0864)	(.0945)	(.0881)
Observations	111571	111571	111571	111571	111571	111571
Dependent Variable	ln(price)	ln(price)	ln(price)	ln(volume)	ln(volume)	ln(volume)
Time Fixed Effects?	Y	Y	Y	Y	Y	Y
Year x MSA Interactions		Y	Y		Y	Y
Year x Retailer Interactions			Y			Y

Cluster-robust standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Dependent variable is the log of the average price of a particular beer in a particular store in a particular month or the log of the total volume in ounces of a particular beer in a particular store in a particular month, as specified. Sample includes all beer produced by Goose Island in Metropolitan Statistical Areas of Iowa, Illinois, Indiana, Kentucky, Missouri, or Wisconsin between 2010 and 2013. Only 12 oz containers sold in packs of six are included in the sample sold by companies that sold products in at least 480 store weeks are included in the sample.

Table 11: Fixed Effects Model (D-i-D), Illinois Subsample,

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post x ABI Market Share	.0287**	-.0060	-.0216	.0024	.0881	-.2147	-27.3879*	-10.545***
	(.0083)	(.0060)	(.0188)	(.0766)	(.0528)	(.2464)	(11.2351)	(2.8377)
Observations	566004	667993	65849	566004	667993	65849	566004	667993
Dependent Variable	ln(price)	ln(price)	ln(price)	ln(volume)	ln(volume)	ln(volume)	# competitors	# competitors
Beer Sample	Craft	Macro	Goose	Craft	Macro	Goose	Craft	Macro
Time Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year x MSA Interactions	Y	Y	Y	Y	Y	Y	Y	Y
Year x Retailer Interactions	Y	Y	Y	Y	Y	Y	Y	Y
Year x Producer Interactions	Y	Y	Y	Y	Y	Y	Y	Y

Cluster-robust standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Dependent variable is the log of the average price of a particular beer in a particular store in a particular month, the log of the total volume in ounces of a particular beer in a particular store in a particular month, the number of craft beer products competing with a particular beer in a particular store in a particular month or the number of macro beer products competing with a particular beer in a particular store in a particular month, as specified. Sample includes all craft beer sold by brewers meeting the Brewers Association definition of a craft brewer, or all macro beer sold by ABI, Constellation, MillerCoors, Heineken, and Pabst specified, in Metropolitan Statistical Areas of Iowa, Illinois, Indiana, Kentucky, Missouri, or Wisconsin between 2010 and 2013. Only 12 oz containers sold in packs of six are included in the sample sold by companies that sold products in at least 480 store weeks are included in the sample.

Table 12: Fixed Effects Model (D-i-D), dep. var. = ln(avg. price), Channel Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post x ABI Market Share	.1548***	.0793***	.0137***	.0102	-.0333	.0090*	.0204***	.0011
	(.0259)	(.0083)	(.0032)	(.0124)	(.0430)	(.0046)	(.0026)	(.0081)
Observations	20615	116097	1415361	91279	84157	223325	1438542	211405
Channel Type	Convenience	Drug	Food	Mass	Convenience	Drug	Food	Mass
Sample	Craft	Craft	Craft	Craft	Macro	Macro	Macro	Macro
Time Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year x MSA Interactions	Y	Y	Y	Y	Y	Y	Y	Y
Year x Retailer Interactions	Y	Y	Y	Y	Y	Y	Y	Y
Year x Producer Interactions	Y	Y	Y	Y	Y	Y	Y	Y

Cluster-robust standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Dependent variable is the log of the average price of a particular beer in a particular store in a particular month. Sample includes all craft beer sold by brewers meeting the Brewers Association definition of a craft brewer or all macro beer sold by ABI, Constellation, MillerCoors, Heineken, and Pabst , as specified, in

Metropolitan Statistical Areas of Iowa, Illinois, Indiana, Kentucky, Missouri, or Wisconsin between 2010 and 2013. Only 12 oz containers sold in packs of six are included in the sample sold by companies that sold products in at least 480 store weeks are included in the sample.

Table 13: Fixed Effects Model (D-i-D), dep. var. = ln(sales volume), Channel Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post x ABI Market Share	1.8257***	.0776	.0602*	.0124	-.2110	-.2718***	-.0270	.0731
	(.2359)	(.0643)	(.0260)	(.1032)	(.3661)	(.0424)	(.0253)	(.0713)
Observations	20615	116097	1415361	91279	84157	223325	1438542	211405
Channel Type	Convenience	Drug	Food	Mass	Convenience	Drug	Food	Mass
Sample	Craft	Craft	Craft	Craft	Macro	Macro	Macro	Macro
Time Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year x MSA Interactions	Y	Y	Y	Y	Y	Y	Y	Y
Year x Retailer Interactions	Y	Y	Y	Y	Y	Y	Y	Y
Year x Producer Interactions	Y	Y	Y	Y	Y	Y	Y	Y

Cluster-robust standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Dependent variable is the log of the total volume in ounces of a particular beer in a particular store in a particular month. Sample includes all craft beer sold by brewers meeting the Brewers Association definition of a craft brewer or all macro beer sold by ABI, Constellation, MillerCoors, Heineken, and Pabst , as specified, in Metropolitan Statistical Areas of Iowa, Illinois, Indiana, Kentucky, Missouri, or Wisconsin between 2010 and 2013. Only 12 oz containers sold in packs of six are included in the sample sold by companies that sold products in at least 480 store weeks are included in the sample.

Table 14: Fixed Effects Model (D-i-D), Weekly Data

	(1)	(2)	(3)	(4)
Post x ABI Market Share	.0111***	.0216***	.0938***	-.0576***
	(.0028)	(.0022)	(.0161)	(.0148)
Observations	4500618	6439958	4500618	6439958
Dependent Variable	ln(price)	ln(price)	ln(volume)	ln(volume)
Sample	Craft	Macro	Craft	Macro
Time Fixed Effects?	Y	Y	Y	Y
Year x MSA Interactions	Y	Y	Y	Y
Year x Retailer Interactions	Y	Y	Y	Y
Year x Producer Interactions	Y	Y	Y	Y

Cluster-robust standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Dependent variable is the log of the average price of a particular beer in a particular store in a particular month or the log of the total volume in ounces of a particular beer in a particular store in a particular month, as specified. Sample includes all craft beer sold by brewers meeting the Brewers Association definition of a craft brewer or all macro beer sold by ABI, Constellation, MillerCoors, Heineken, and Pabst, as specified, in Metropolitan Statistical Areas of Iowa, Illinois, Indiana, Kentucky, Missouri, or Wisconsin between 2010 and 2013. Only 12 oz containers sold in packs of six are included in the sample sold by companies that sold products in at least 480 store weeks are included in the sample.

Table 15: Fixed Effects Model (D-i-D), Dropping Data Surrounding the Acquisition

	(1)	(2)	(3)	(4)
Post x ABI Market Share	.0105**	.0169***	.1808***	-.0220
	(.0034)	(.0028)	(.0273)	(.0235)
Observations	1590283	1881808	1590283	1881808
Dependent Variable	ln(price)	ln(price)	ln(volume)	ln(volume)
Sample	Craft	Macro	Craft	Macro
Time Fixed Effects?	Y	Y	Y	Y
Year x MSA Interactions	Y	Y	Y	Y
Year x Retailer Interactions	Y	Y	Y	Y
Year x Producer Interactions	Y	Y	Y	Y

Cluster-robust standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Dependent variable is the log of the average price of a particular beer in a particular store in a particular month or the log of the total volume in ounces of a particular beer in a particular store in a particular month, as specified. Sample includes all craft beer sold by brewers meeting the Brewers Association definition of a craft brewer or all macro beer sold by ABI, Constellation, MillerCoors, Heineken, and Pabst, as specified, in Metropolitan Statistical Areas of Iowa, Illinois, Indiana, Kentucky, Missouri, or Wisconsin between 2010 and 2013. Only 12 oz containers sold in packs of six are included in the sample sold by companies that sold products in at least 480 store weeks are included in the sample.

Appendix

Table 16: Craft Beer Companies

Company	Frequency	Percent	Company	Frequency	Percent	Company	Frequency	Percent
3 Floyds Brewing Company	4,809	0.29	Empyrean Brewing Company	3,091	0.19	New Glarus Brewing Company	11,826	0.72
3 Sheeps Brewing Co.	489	0.03	Firestone Walker Brewing Company	1,808	0.11	New Holland Brewing Company	8,664	0.53
5 Rabbit Cerveceria	3,654	0.22	Flat 12 Bierwerks	1,555	0.09	North Coast Brewing Co.	1,043	0.06
Abita Brewing Company	17,786	1.08	Flying Dog Brewery	14,954	0.91	North Coast Brewing Company	2,717	0.17
Alaskan Brewing Company	7,174	0.44	Fort Collins Brewery	2,148	0.13	O'Fallon Brewery	16,662	1.01
Ale Asylum Brewery	6,589	0.4	Founders Brewing Company	22,419	1.36	O'so Brewing Company	2,035	0.12
Alltech's Lexington Brewing & Distill..	6,696	0.41	Four Horsemen Brewery	1,149	0.07	Odell Brewing Company	4,121	0.25
Anchor Brewing Company	15,145	0.92	Free State Brewing Company	609	0.04	Olde Main Brewing Company	3,562	0.22
Anderson Valley Brewing Company	979	0.06	Full Sail Brewing Inc.	513	0.03	Oskar Blues Brewing Company	3,194	0.19
Arcadia Brewing Company	3,668	0.22	Furthermore Beer	1,504	0.09	Oskar Blues Grill & Brew	670	0.04
Argus Brewery	1,955	0.12	Genesee Brewing Company	12,442	0.76	Peace Tree Brewing Company	4,279	0.26
August Schell Brewing Company	8,803	0.54	Goose Island Beer Company	111,571	6.79	Pete's Brewing Company	1,428	0.09
Avery Brewing Company	3,475	0.21	Grand Teton Brewing Company	2,068	0.13	Potosi Brewing Company	8,104	0.49
Backpocket Brewing	1,292	0.08	Granite City Food & Brewery	918	0.06	Pyramind Brewing Company	3,814	0.23
Ballast Point Brewing Company	491	0.03	Gray Brewing Company	1,059	0.06	Redhook Ale Brewery	20,820	1.27
Baraboo Brewing Company	5,979	0.36	Great Divide Brewing Company	1,798	0.11	Revolution Brewing	5,069	0.31
Bard's Tale Beer Company	2,517	0.15	Great Lakes Brewing Company	15,211	0.93	Rivertown Brewery & Barrel House	1,917	0.12
Barley Island Brewing Company	663	0.04	Great River Brewery	494	0.03	Rogue Ales & Spirits	14,733	0.9
Bear Republic Brewing Company	470	0.03	Griesedieck Brothers Brewery	929	0.06	Saint Louis Brewery	33,760	2.05
Bell's Brewery	71,478	4.35	Hamm's Brewing Company	2,617	0.16	Samuel Adams	76,155	4.63
Bent River Brewing Company	1,159	0.07	Harpoon Brewery	6,652	0.4	Sand Creek Brewing Company	3,809	0.23
Berghoff Brewery	6,967	0.42	Hook & Ladder Brewing Company	947	0.06	Schlitz Brewing Company	10,018	0.61
Berkshire Brewing Company	7,144	0.43	Horny Goat Brewing Company	6,678	0.41	Sea Dog Brewing Company	2,345	0.14
Big Bay Brewing Company	3,720	0.23	Hub City Brewing Company	1,684	0.1	Shipyard Brewing Company	1,531	0.09
Big Sky Brewing Company	22,268	1.36	Hudepohl-Schoenling Brewing Company	1,549	0.09	Shmaltz Brewing Company	1,352	0.08
Black Sheep Brewery	946	0.06	Humboldt Brewing Company	1,457	0.09	Sierra Nevada Brewing Company	100,114	6.09
Blitz-Weinhard Brewing Company	16,524	1.01	James Page Brewing Company	3,506	0.21	Ska Brewing Company	2,384	0.15
Blue Star Brewing Company	498	0.03	Kona Brewing Company	9,306	0.57	Smuttynose Brewing Company	1,204	0.07
Boston Beer Company	139,533	8.49	Lagunitas Brewing Company	20,468	1.25	Southern Tier Brewing Company	6,915	0.42
Boulder Beer Company	3,104	0.19	Lake Louie Brewing Company	1,586	0.1	Speakeasy Ales & Lagers	906	0.06
Boulevard Brewing Company	43,060	2.62	Lakefront Brewery, Inc.	34,775	2.12	Spoetzl Brewery	32,509	1.98
Brau Brothers Brewing Company	1,844	0.11	Latrobe Brewing Company	32,321	1.97	Stevens Point Brewery	41,913	2.55
Breckenridge Brewery	18,022	1.1	Left Hand Brewing Company	8,240	0.5	Stone Brewing Company	12,921	0.79
Bricks & Barley Brewing Company	6,831	0.42	Lost Coast Brewery	2,334	0.14	Summit Brewing Company	15,175	0.92
Bridgeport Brewing Company	5,971	0.36	Lucky Bucket Brewing Company	1,395	0.08	The All American Beer Company	891	0.05
Brooklyn Brewery	3,413	0.21	Mad River Brewing Company	1,010	0.06	The Schlafly Tap Room	6,261	0.38
Buffalo Bill's Brewery	1,653	0.1	Madhouse Brewing Company	1,828	0.11	Tin Mill Brewing Company	800	0.05

Capital Brewery	33,562	2.04	Magic Hat Brewing Company	31,892	1.94	Tommyknocker Brewery	4,409	0.27
Central Waters Brewing Company	4,374	0.27	Margaritaville Brewing Company	29,665	1.81	Triton Brewing Company	1,237	0.08
Chicago Beer Company	11,642	0.71	Matt Brewing Company	543	0.03	Two Brothers Brewing Company	23,694	1.44
Chick Beer Company	819	0.05	Mendocino Brewing Company	1,347	0.08	Tyranena Brewing Company	5,520	0.34
Christian Moerlein Brewing Company	2,217	0.13	Metropolitan Brewing	1,043	0.06	Uinta Brewing Company	907	0.06
Crown Valley Brewing & Distilling Com..	1,204	0.07	Millstream Brewing Company	10,325	0.63	Upland Brewing Company	10,987	0.67
Cutters Brewing Company	803	0.05	Milwaukee Brewing Company	5,475	0.33	Victory Brewing Company - Downingtown	2,830	0.17
Dark Horse Brewing Company	1,018	0.06	Minhas Craft Brewery	3,483	0.21	West Sixth Brewing Company	692	0.04
Deschutes Brewery	12,068	0.73	Morland Brewery	472	0.03	Weston Brewing Company	2,764	0.17
Dixie Brewing Company	1,462	0.09	Mother's Brewing Company	4,233	0.26	Weyerbacher Brewing Company	733	0.04
Dogfish Head Craft Brewery	11,100	0.68	Mt. Carmel Brewing Company	710	0.04	Widmer Brothers Brewing Company	15,247	0.93
Double Take Brewing Company	5,754	0.35	Murphy Brewery Ireland Limited	884	0.05	William K Busch Brewing Company	3,445	0.21
Emmett's Brewing Company	602	0.04	New Belgium Brewing Company	141,324	8.6	World Brews	5,883	0.36
						Total	1,643,352	

Table 17: Macro Beer Companies

Company	Frequency	Percent	Company	Frequency	Percent	Company	Frequency	Percent
Anheuser-Busch	756,781	38.66	Heineken	233,018	11.9	Pabst	6,191	0.32
Grupo Modelo S.A. de C.V.	207,096	10.58	MillerCoors	754,343	38.54	Total	1,957,429	